

Customer No.: 31561
Application No.: 10/065,091
Docket No.: 5486-US-PA

REMARKS

Present Status of the Application

The Office Action withdrew the restriction requirement imposed on December 12th, 2005 and stated that claims 1-13 and 56-61 are examined on the merits. Moreover, the Office Action rejected claims 1-5, 7, 9-10, 12-13, 56-59 and 61 under 35 U.S.C. 103(a), as being unpatentable over Fujino (U.S. Patent No. 6,822,708). The Office Action also rejected claim 6 under 35 U.S.C. 103(a), as being unpatentable over Fujino in view of Nakai et al. (U.S. Patent No. 6,144,429). The Office Action further rejected claims 8 and 60 under 35 U.S.C. 103(a), as being unpatentable over Fujino in view of Kim et al. (U.S. Patent No. 6,693,689). The Office Action rejected claim 11 under 35 U.S.C. 103(a) as being unpatentable over Fujino in view of Kubo et al. (U.S. Patent No. 6,819,379). Applicants have amended the specification and claims 1 and 56 to improve clarity. No new matter has been introduced by the amendment made herein. After entry of the foregoing amendments, claims 1-13 and 56-61 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Office Action Rejections

Office Action rejected claims 1-5, 7, 9-10, 12-13, 56-59 and 61 under 35 U.S.C. 103(a), as being unpatentable over Fujino (U.S. Patent No. 6,822,708; hereafter Fujino).

Applicants respectfully traverse this rejection and state that amended claims 1 and 56 have distinguished over the cited arts. As amended, claims 1 and 56 recite respectively:

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Claim 1. A liquid crystal display (LCD) structure, comprising a first substrate panel, a second substrate panel, and a liquid crystal layer disposed between the first substrate panel and the second substrate panel, a plurality of pixel portions being formed by respective electrodes for applying a voltage to the liquid crystal layer, each of the pixel portions comprising

an organic insulating layer over the first substrate panel, wherein the surface of the organic insulating layer has a plurality of protrude/recess structures thereon;

a conformal reflective layer over the organic insulating layer, wherein the conformal reflective layer serves as a reflector of light;

a transparent dielectric layer over the conformal reflective layer, wherein the dielectric layer has a smoother upper surface than the bumpy organic insulating layer; and

a first transparent conductive layer over the transparent dielectric layer, wherein the conformal reflective layer is electrically isolated from the first transparent conductive layer.

Claim 56. A liquid crystal display (LCD) structure, comprising a first substrate panel, a second substrate panel, and a liquid crystal layer disposed between the first substrate panel and the second substrate panel, a plurality of pixel portions being formed by respective electrodes for applying a voltage to the liquid crystal layer, each of the pixel portions comprising

an organic insulating layer over the first substrate panel, wherein the surface of the organic insulating layer has a plurality of protrude/recess structures thereon;

a conformal reflective layer over the organic insulating layer, wherein the conformal reflective layer serves as a reflector of light;

a transparent dielectric layer over the conformal reflective layer, wherein the transparent dielectric layer has a substantially planar upper surface; and

a first transparent conductive layer over the transparent dielectric layer, wherein the conformal reflective layer is electrically isolated from the first transparent conductive layer.

(Emphasis added). Applicants assert that claims 1 and 56 patently define over the cited art for at least the reason that the cited art fails to disclose at least the features emphasized above.

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In the present invention, each pixel portion of the liquid crystal display (LCD) comprises an organic insulating layer, a conformal reflective layer, a transparent dielectric layer and a first transparent conductive layer. Notably, as shown in Fig. 2 of the present invention, the uneven surface of the organic insulating layer 66 may lead to liquid crystal misalignment and liquid crystal cell gap non-uniformity problems. But **the transparent dielectric layer 84 having a relatively planar upper surface is formed over the organic insulating layer 66 and the conformal reflective layer 82.** With this structural arrangement, the liquid crystal layer has a uniform thickness throughout and hence problems caused by having a non-planar reflection layer are avoided. It is clearly shown in Fig. 2 of the present invention, the conformal reflective layer (labeled 82) is electrically isolated from the first transparent conductive layer (labeled 86).

However, in Fujino's application, **transparent conductive film 9**, which is deemed to be the first transparent conductive layer of the present invention by the Office Action, is **electrically connected to the reflection electrode 10**, which is regarded as the conformal reflective layer of the present invention by the Office Action (as shown in Fig. Fig. 11 of Fujino's application). Furthermore, Fujino emphasizes that "the transparent conductive film 9 is connected electrically to the reflection electrode 10 through the contact hole H2 so as to be conductive" (col. 8, lines 22-24). That is, the structure relationship between the transparent conductive film 9 and the reflection electrode 10 in Fujino's application is totally different from the structure relationship between the first transparent conductive layer and the conformal reflective layer disclosed by the present invention. Fujino fails to teach or suggest that the reflect electrode 10 is electrically

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isolated from the transparent conductive film 9 so that people skilled in the art would not think to modify Fujino's application by electrically isolating the reflect electrode 10 from the transparent conductive film 9 to obtain the structure provided by the present invention.

Hence, Applicants respectfully submit that Fujino fails to render claims 1 and 56 unpatentable. Claims 1-5, 7, 9-10, 12-13, 56-59 and 61, which depend from claims 1 and 56 respectively, are also patentable over Fujino, at least because of their dependency from an allowable base claim. Applicants respectfully assert that these claims are in condition for allowance. Thus, reconsideration and withdrawal of this rejection are respectively requested.

The Office Action also rejected claim 6 under 35 U.S.C. 103(a), as being unpatentable over Fujino in view of Nakai et al. (U.S. Patent No. 6,144,429; hereafter Nakai).

Since claim 6 is dependent claim which further defines the invention recited in claim 1, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 103. Thus, reconsideration and withdrawal of this rejection are respectively requested.

The Office Action further rejected claims 8 and 60 under 35 U.S.C. 103(a), as being unpatentable over Fujino in view of Kim et al. (U.S. 6,693,689; hereafter Kim) and stated that Kim discloses an LCD device having a dielectric layer including a color filter although Fujino fails to disclose that the transparent dielectric layer includes a color filter layer.

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In the citation, Fujino clearly emphasizes that the protective film 12, which is regarded as the transparent dielectric layer of the present invention by the Office Action, is made of the material transparent to a visible light for absorbing an ultraviolet light (col. 7, lines 60-62). That is, the protective layer 12 is served to screen out the ultraviolet light. However, it is well known in the art that the color filter is served to screen out lights with wavelengths within the visible light band width and transparent to a specific light with a specific wavelength in the visible light band width. Therefore, the functionality for the visible-ultraviolet filter, the protective layer 12, is different from the color filter disclosed by Kim. On the other words, Fujino emphasizes the use of the protective layer to screen out the ultraviolet light and transparent to the visible light and this functionality cannot be simply replaced by a color filter. Hence, Applicants respectfully submit that the combination of Fujino with Kim in a way to replace the protective layer with the color filter is improper. In addition, the way to combine Fujino with Kim by replacing the protective layer with the color filter will ruin the claimed features of Fujino's application. Therefore, skill artisan would not think to modify Fujino's application by replacing the protective layer with the color filter disclosed by Kim.

As described in the paragraph [0037] of the present invention, "The invention also provides a liquid crystal display structure having a **color filter layer above the reflective layer** and the transmission layer, and the color filter layer has a planar surface. Aside from having excellent legibility and display efficiency, the LCD structure is able to minimize liquid crystal misalignment caused by an uneven reflective layer."

Furthermore, the color filter layer 84 above the reflective layer 82 can minimize

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the position misalignment between the color filter layer 84 and the reflective layer 82. The protective layer 12 of Fujino is formed to cover the whole substrate 1, and the protective layer 12 does not need to be patterned corresponding to the pixel region. In contrast, the color filter layer 84 of the present invention should be precisely patterned into blocks according to the corresponding pixel region as well known to a person skilled in the art. The position alignment is required for the color filter 84 to the reflective layer 82 of the present invention, but not for that of the protective layer 12 of Fujino. The color filter layer (not shown) of Fujino would meet the problem of position misalignment when the color filter layer and the reflective layer are respectively formed on opposite substrates.

When the light passing through a color filter layer on an upper substrate to be filtered into a specific light, such as R, G, or B light, some of the filtered light may be scattered into adjacent pixel as transmitting the liquid crystal layer between the upper substrate and the bottom substrate, . According to the present invention, the color filter layer 84 formed above the reflective layer 82 can reduce unnecessary filtered light scattered into adjacent pixel that may induce color deviation of adjacent pixel.

Although Fujino discloses a dielectric layer over the reflective layer, Kim fails to teach or suggest to do so. Fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (also stated in 2143.01 in Manual of Patent Examining

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Procedure (MPEP), with respect to "Suggestion or Motivation To Modify the Reference"). There must be some motivation to combine the references; this motivation must come from "the nature of the problem to be solved, the teachings of the prior art, [or] the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998). "Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed." *In re Kozab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000).

Hence, Applicants respectfully submit that Fujino in views of Kim fails to render claims 8 and 60 unpatentable. Moreover, since claims 8 and 60 are dependent claims which further define the invention recited in claims 1 and 56, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 103. Thus, reconsideration and withdrawal of this rejection are respectively requested.

The Office Action further rejected claim 11 under under 35 U.S.C. 103(a), as being unpatentable over Nakamura and Nakai in view of Kubo et al. (U.S. U.S. Patent No. 6,819,379; hereafter Kubo).

Since claim 11 is dependent claim which further defines the invention recited in claim 1, Applicants respectfully assert that these claims also are in condition for allowance according to the same reasons as discussed above for the rejection 103. Thus,

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reconsideration and withdrawal of this rejection are respectively requested.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1 and 56 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-13 and 57-61 patently define over the prior art as well.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1-13 and 56-61 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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